THE DISCOVERY CARTRIDGE SYSTEM

The DISCOVERY CARTRIDGE SYSTEM is a hardware/software combination that is the most useful disk system improvement ever developed for the Atari ST computer. The DISCOVERY CARTRIDGE's hardware eliminates the limitations of the floppy disk controller chip built inside your ST computer. The DISCOVERY CARTRIDGE's software package contains the "tools" needed to realize the maximum benefit afforded by the hardware.

The DISCOVERY CARTRIDGE requires no internal installation. It plugs into the cartridge port and plugs in-line with the disk drive cable. It can be used with any Atari ST or MEGA computer, foreign or domestic. The DISCOVERY CARTRIDGE does NOT require an external power supply, and can be used with computers that have any combination of internal and external drives.

READ AND WRITE ANY FLOPPY DISK TYPE

The DISCOVERY CARTRIDGE will allow your ST computer to read, analyze, format, write, and verify virtually any floppy disk format used on any computer. The only limitation is the type and size of disk drive plugged in. This power is focused into the DISCOVERY CARTRIDGE's main purpose; DISK BACKUP of copy protected disks. The DISCOVERY CARTRIDGE has many other uses that qualify it as much more than just a powerful copying device.

BUILT IN DISK CONTROLLER IS LIMITED

Without the DISCOVERY CARTRIDGE, your ST computer's disk system is limited by the lack of versatility of the WD1772 chip, which does all of the disk reading and writing. The WD1772 does a good job for what it was designed, but that's it. It limits your ST computer's ability to access and copy many disk formats.

CUSTOM CHIP REMOVES THE LIMITATIONS

HAPPY COMPUTERS has designed our own custom chip for maximum versatility in disk reading and writing. Using the latest in compact energy efficient technology, this one integrated circuit chip contains the equivalent of over a hundred other chips in one small package, and makes the DISCOVERY CARTRIDGE possible and affordable. The DISCOVERY CARTRIDGE leaps beyond the limitations of most other disk reading and writing circuits.

COPYING BIT BY BIT

The DISCOVERY CARTRIDGE is much more than an ordinary bit copier. Most so called "bit copiers" are still very limited by their hardware design. Most bit copiers have a limited data separator that reduces disk reading accuracy and restricts the type of disks that can be read. The writing circuit of most bit copiers is restricted. Only certain formats of data at specific data rates can be written. However, it is true that even a simple bit copier can do more than the WD1772 chip in the ST computer.

HAPPY COMPUTERS did not repeat the mistakes of other bit copier designs. We took into account all of the limitations that had to be eliminated. We designed our own custom disk analyzer and formatter chip to fill the void. The DISCOVERY CARTRIDGE SYSTEM design utilizes HAPPY COMPUTERS' custom chip, the speed of the 68000 processor, and the huge RAM memory of the ST computer to greatly surpass the typical bit copier. Most bit copiers have little more than the ability to read and write separated data and clock bits. HAPPY COMPUTERS' DISCOVERY CARTRIDGE allows your ST to precisely read and write disk data with control at the flux transition interval level. This level of control is much more powerful than mere clock/data control. To accomplish this, the DISCOVERY CARTRIDGE fully utilizes the ST COMPUTER's maximum data rate of over 10 million bits per second. To provide this control and accuracy, the DISCOVERY CARTRIDGE magnifies each bit interval of disk data by 64 times.

When I talk about bit copiers, I note that as of this writing there aren't any available yet for the ST. There are bit copiers for other home computers. We have heard that there are bit copiers under development for the ST by other companies. The easiest comparison is that a typical clock/data bit copier takes about 10 to 40 chips, whereas the equivalent to our DISCOVERY CARTRIDGE is over a hundred chips. Although bit copiers are not available for the ST computer yet, many people are familiar with the bit copiers that are presently available for other home computers, and their limitations.

THE VARIOUS DISK SYSTEMS

STANDARD ST COMPUTER

The ST computer uses a WD1772 chip for disk reading and writing. It can only read and write in MFM double density at the 250k bits per second rate. It can be used with 3.5 and 5.25 inch floppy disk drives. The 1772 chip uses CRC error detection for data integrity. This system is very limited by the

fact that it cannot write some clock/data patterns during disk formatting, and cannot vary the data separation method and bit rate for reading and writing. All "software only" disk backup programs for the ST that do not require special hardware have all of these limitations.

ST WITH A MODEST BIT COPIER

Since none are available yet, we base this comparison on a typical design built from about 20 "off the shelf" chips. The limitation as far as what clock/data patterns could be written is removed. Still, the system would have limitations as far as the accuracy of the data separator for reading, and the data rate and separation method for both reading and writing, but would probably be somewhat better than the standard ST COMPUTER.

An example of what a typical bit copier could not do is to read and write disks from a Macintosh computer using a standard Atari disk drive. The 3.5 inch disk drive used with a Macintosh computer varies the drive rotating speed according to the track number. The standard Atari ST 3.5 inch disk drive does not vary the drive rotating speed. Reading and writing Macintosh disks using a standard Atari disk drive would require a wide bandwidth of data rates to emulate the speed change. A typical bit copier could not do the job.

The typical bit copier also suffers from lack of data integrity. The limited data separator can cause soft errors to go undetected during the copying process. Data can be lost while copying, without any warning or indication of a problem. You may not be aware there was a copying error until you try to access all the data and programs on the copy!

ST COMPUTER WITH THE
DISCOVERY CARTRIDGE SYSTEM

The custom designed chip used in the DISCOVERY CARTRIDGE system allows complete flexibility in programming the data separator used for disk reading and analysis. When writing, this custom chip permits complete control over the placement of each data and clock bit. Any bit pattern at any data rate from 0 to 800k bits per second can be read and written. The DISCOVERY CARTRIDGE can vary the bit density for each and every bit being written. Since the DISCOVERY CARTRIDGE software reads disk data by analyzing flux transition intervals, it can not only detect data errors, but also correct some of them. Other inferior disk systems may sometimes incorrectly read data that is normally error free.

With the proper drive mechanism and media, virtually any floppy disk format can be read or written. High density 5.25 inch disks used with IBM AT type computers, and 8 inch double density disks require a data rate of up to 500k bits per second. The high density 5.25 disk also requires 300k bits per second. Macintosh disks placed in a standard 300 rpm Atari ST drive require data rates that vary between 200k and 400k bits per second. Since the DISCOVERY CARTRIDGE has precise continuously variable control of the data rate and bit density, it can simulate the effect of changing the drive speed without the need of special circuitry and drive modifications to actually change the speed. By varying the data rate, the DISCOVERY CARTRIDGE can compact the bits written on a track, allowing more sectors and/or data to be written on each track. This has the same effect as slowing the drive speed down, without the need to change the speed at all.

MACINTOSH DISK ACCESS

A product called TRANSLATOR ONE from DATA PACIFIC Inc. is offered for the purpose of reading and writing Macintosh disks with a standard ST disk drive. We haven't yet had "hands on" use of this item, but can make a comparison based on the information made available so far. The main difference between these products is that our DISCOVERY CARTRIDGE is a much better value. The TRANSLATOR ONE costs more than our DISCOVERY CARTRIDGE, even though the TRANSLATOR ONE does less! The only thing the TRANSLATOR ONE does is allow your ST to read & write disks in Macintosh format. Our DISCOVERY CARTRIDGE costs less, reads & writes Macintosh disks, and does much more.

There is a difference concerning the usage of the products. The TRANSLATOR ONE does not use the cartridge slot, so it allows the MAGIC SAC to be plugged into your ST at the same time. When the MAGIC SAC is used in conjunction with the TRANSLATOR ONE, you can access Macintosh disks directly. Although it may be possible to configure the DISCOVERY CARTRIDGE to be online simultaneously with the MAGIC SAC, we cannot promise that they will work together exactly like the TRANSLATOR. We intend that the DISCOVERY CARTRIDGE be used to convert the disk between the Macintosh format and the MAGIC format that the MAGIC SAC system uses. Once the DISCOVERY CARTRIDGE converts the disk to MAGIC format, the MAGIC SAC can access the disk without the DISCOVERY CARTRIDGE plugged in. Neither the DISCOVERY CARTRIDGE nor the TRANSLATOR ONE can exactly emulate the special hardware register locations used by some Macintosh disk programs, so some Macintosh programs will not run on your ST. Note: the MAGIC SAC is made by DATA PACIFIC, and allows your Atari ST computer to run many programs from the Macintosh computer.

DISK BACKUP WITH YOUR ST

What disks can the DISCOVERY CARTRIDGE SYSTEM copy, and what disks can't be copied? With the correct drive mechanism and media, your DISCOVERY CARTRIDGE SYSTEM can backup virtually any floppy disk format. Using the software provided with the DISCOVERY CARTRIDGE, the task of disk backup may range from completely automatic, to semiautomatic.

Disks that probably cannot be copied (without special media) are those that have physical damage such as holes, laser burns, or scratches as the protection method. In this case it really depends on how accurately the disk damage is utilized. Some protected "damaged" disks may have gross scratches that the user can copy onto the backup. You can often tell which disks use the method of "media damage" since they usually require that writing to the disk be allowed. An examination of the disk surface by the naked eye may reveal these scratches. A laser burn may be more difficult to find, and impossible to duplicate without a specifically tailored disk drive mechanism.

There are also some very high density floppy disk systems that go beyond the 800k bits per second of the DISCOVERY CARTRIDGE. Floppy disk systems with 5 or 10 megabytes may use data rates more like hard disk systems, or require special stepper motor control circuitry. These high density floppy disks may require a specific custom disk controller chip which may be outside the DISCOVERY CARTRIDGE's intended bandwidth.

DISK FILES

The DISCOVERY CARTRIDGE SYSTEM will allow the user to convert an image of a copy protected floppy disk into a file. The "disk image" contains not only the disk's sector data, but also the disk format and structure information. The "disk image" file will require more disk space than the original sector data. It may be possible to store the image of a single sided disk into a file on a double sided disk. A hard disk drive can be used to store larger files.

Even though the file contains all of the information from the copy protected original disk, the program will not be executable in the file form. The DISCOVERY CARTRIDGE software can be used to recreate the executable form of the disk using the information contained in the file. HAPPY COMPUTERS does not intend for the DISCOVERY CARTRIDGE to be used for the purpose of "breaking" programs. HAPPY COMPUTERS cautions that using a modem to send a file which contains a copyrighted computer program may be illegal.

Storing an image of a copy-protected disk is just an example. Any disk image can be saved as a file, to be recalled later to clone the original disk.

CUSTOM FORMATTING

With the superior control of data types and rates, and with the ability to save disk images as files, the DISCOVERY CARTRIDGE is the first and only system to offer low cost custom disk formatting, with almost unlimited capability. Our analyze and edit software combined with the DISCOVERY CARTRIDGE hardware helps simplify the task. Custom formatted floppy disks can be created that meet the needs of most other personal computers as well as the Atari.

USER CONFIGURABLE OPTIONS

The DISCOVERY CARTRIDGE comes out of the box "factory configured." The average user will just plug it in and use it. Our custom chip and circuit board design allows the user to further customize and configure their DISCOVERY CARTRIDGE disk system. By adding a few components, it is possible for the user to add several features. For example, you can configure your DISCOVERY CARTRIDGE to allow up to 4 floppy drives to be installed.

You can add a feature to SAVE MONEY. Along with the extra drives, you can add a switch to further control drive selection. Let's say you had two 3 1/2" drives as the normal drives A and B, and a 5 1/4" drive as a 3rd drive, connected through the DISCOVERY CARTRIDGE. By toggling one switch you could cause the 5 1/4" drive to become selected as drive A, allowing you to boot your computer from the 5 1/4" drive. Therefore, you could use the cheaper 5 1/4" disks to backup all of your programs. This feature would not work with ST and MEGA series computers that have an internal drive A.

You can add a battery backed up clock. You can allow another cartridge to be plugged in at the same time as the DISCOVERY CARTRIDGE, while resolving address conflicts. You can utilize extra control and sense lines in any manner according to the needs of a special application, including special control of extra signals during the disk writing process. Our instruction manual explains how you can custom configure your DISCOVERY CARTRIDGE. These options are not currently available for installation in our factory, and must be added by the user. With a little soldering, a user can configure his DISCOVERY CARTRIDGE as needed. Most users will not need to add any options.

COMPARISON TO 8 BIT HAPPY

The DISCOVERY CARTRIDGE for the ST shares the purpose of DISK BACKUP with the HAPPY 810 and 1050 ENHANCEMENT for the 8 bit Atari home computers. Both were invented by the same person at HAPPY COMPUTERS. That's where the similarity ends.

HAPPY COMPUTERS has never provided software for format analysis that operated with the 8 bit ENHANCEMENT. The HAPPY BACKUP program for the 8 bit ENHANCEMENT does some analysis, but does not display the information. HAPPY COMPUTERS does sell a HAPPY CUSTOMIZER program that permits some limited custom formatting with the 810 HAPPY. Products are available from other companies that allow limited format analysis and custom formatting with HAPPY ENHANCED 810 and 1050 drives. The 8 bit ENHANCEMENT doesn't have the hardware to perform format analysis as well as the DISCOVERY CARTRIDGE, since it also uses a floppy disk controller chip which is limited. HAPPY COMPUTERS has used a machine like the DISCOVERY CARTRIDGE to do disk analysis in our laboratory for many years. Superb format analysis that doesn't miss any detail, and maximum control of custom formatting are the underlying keys that make the DISCOVERY CARTRIDGE more powerful than the 8 bit HAPPY.

The 8 bit HAPPY requires that some of the backups only be run on a HAPPY ENHANCED disk drive. The DISCOVERY CARTRIDGE does NOT have to be present to run the backup. In fact, with a 5 1/4" drive connected to your ST, the DISCOVERY CARTRIDGE can backup many of these 8 bit Atari programs and produce a copy which does not need to run on a special drive. The custom formatting ability of the DISCOVERY CARTRIDGE is vastly improved over the Atari 8 bit drives, even with our ENHANCEMENT.

The 8 bit HAPPY can emulate a disk with physical damage, such as a laser hole, but requires that the backup be run only on a HAPPY DRIVE. The DISCOVERY CARTRIDGE does not have a laser hole emulation mode, and provides no method to backup disks that have physical damage.

With our 8 bit HAPPY ENHANCEMENT system, a HAPPY ENHANCEMENT circuit board had to be installed inside each disk drive. The DISCOVERY CARTRIDGE for ST computers plugs in externally. Only one DISCOVERY CARTRIDGE is needed to support all features for every drive connected to that computer.

THE CUSTOM CHIP

The heart of the DISCOVERY CARTRIDGE is HAPPY COMPUTERS' custom designed HART-D chip (integrated circuit). This is the third custom HART chip HAPPY COMPUTERS has designed. The letters H A R T stand for "HAPPY ATARI ROTATING THING!" Our previous HART chips were ROM-processors for the 810 ENHANCEMENT's version 7 upgrade and the 1050 ENHANCEMENT's control program. HAPPY COMPUTERS has always pushed technology to the limit, to offer our customers the state of the art.

Although a simple bit copier can be constructed from standard "off the shelf" components, a circuit board with over 100 standard components would be needed to match the performance and capability in the HART-D chip. Such a large circuit board may have more chips and use more electrical power than the ST computer itself. Not very practical.

The same technology that allows a complete computer in a wristwatch which runs for years on a small battery allows HAPPY COMPUTERS to reduce the size and electrical power requirements of most of the circuitry of the DISCOVERY CARTRIDGE to a single chip. Although other companies may offer a bit copier made from off the shelf components, HAPPY COMPUTERS doesn't waste our customers money. Our commitment to quality and value dictates that we must utilize the newest technology to offer our customers the DISCOVERY CARTRIDGE, a product that meets the need now and in the future.

GET BIG SAVINGS - ADVANCE ORDER YOUR DISCOVERY CARTRIDGE NOW

HAPPY COMPUTERS has begun to manufacture the DISCOVERY CARTRIDGE. As of this printing, we do not have any units except engineering prototypes which cannot be sold. Demand for this product is already heavy, and we have started taking advance orders. We do not expect to have the DISCOVERY CARTRIDGE available for immediate delivery from stock until the second quarter of 1988. It really depends on how fast our manufacturing can keep up with the demand. This is usually worst when a product is first offered. It is likely that we will begin shipping ADVANCE orders during January of 1988.

The advertised introductory price for the complete DISCOVERY CARTRIDGE system is $249.95 in US funds. You can save a substantial amount of money and receive a DISCOVERY CARTRIDGE sooner by ordering in advance. We offer an advance order discount price of $147, a savings of almost $103.

HAPPY COMPUTERS, Inc. • P.O. Box 1268 • Morgan Hill, California, USA • 95037
SALES & TECHNICAL HELP: (408) 779-3830 • m-f 9am - 5pm pacific time
INFORMATION MACHINE (408) 778-6092 • 24 hours

ADVANCE ORDER REQUIREMENTS

To get the savings and sooner delivery of an advance order for the DISCOVERY CARTRIDGE, you must place your order and pay before we ship the first unit. If you order after we ship the first unit, you still benefit by having your DISCOVERY CARTRIDGE shipped earlier, but you will have to pay the regular (higher) introductory price. HAPPY COMPUTERS always ships orders in the sequence that corresponds to our receipt of the order. If you order first, yours gets shipped first. It's only fair that way. We do not budge on this policy, so don't ask!

If luck is on our side, we may even ship the earliest DISCOVERY CARTRIDGE orders before 1988. However, we will guarantee the advance order discount price of $147 through January 31, 1988. This special price will continue to be offered until we ship the first unit. After January 31, 1988, you can check to see if this discount price is available by writing or calling our office or by calling our information machine.

You may advance order the DISCOVERY CARTRIDGE from HAPPY COMPUTERS by phone from throughout the world using a MASTERCARD or VISA credit card. You may advance order through the mail using a credit card, check, or money order. The prices shown above include shipping to addresses in the United States. Add $10.00 for any order to be shipped to an address outside the United States. Military service persons at APO or FPO addresses do NOT need to add $10.00. Foreign orders not made by credit card must be paid by an international money order payable in US funds through a US bank, and that money order must have the MICR encoded magnetic symbols at the bottom edge.

After we receive your advance order, we will send you an order confirmation and a confirmation number. That number will establish your place in line for shipment. You may cancel your advance order and receive a refund at any time prior to shipment. If you cancel, you will loose your original place in line for shipment even if you reorder later.

ADVANCE ORDER - SHIPMENT

As of today, we cannot promise any specific delivery schedule for advance orders. HAPPY COMPUTERS relies on several companies to manufacture and deliver the various components that are used in our DISCOVERY CARTRIDGE. We have been designing and selling our products for over 5 years, and our experience has shown that suppliers can be late in delivery. Therefore, we do not promise any particular delivery schedule. We do promise that we

will work to ship your order as soon as possible, without compromising the quality and function.

Be smart, be HAPPY, order early! The earlier you order your DISCOVERY CARTRIDGE, the sooner we will ship it.

CONTEST WINNER

In our last flyer, we announced a contest to name our first product for the ST computer. Obviously, the name chosen as the winner is the DISCOVERY CARTRIDGE. To express our thanks, all of those that helped to name this product by sending in an entry will receive a special discount coupon, even if they did not win the grand prize.

HAPPY COMPUTERS

HAPPY COMPUTERS has been selling disk drive improvement and disk backup hardware and software packages since 1982. We are one of the few 3rd party hardware and software add-on manufacturers for Atari that has been around for more than 5 years.

While other companies have come and gone, HAPPY COMPUTERS has been able to stay in business for some very simple reasons. Our products work, and they work like our advertising describes them. We stand behind our products. We still support our oldest 8 bit product, the HAPPY 810 ENHANCEMENT, with upgrades. Each upgrade adds new features and backup capability for the latest programs and protection methods. We have sold over 15 thousand of our HAPPY ENHANCEMENT boards for the 8 bit Atari. Our efforts have earned the continuous praise of our customers. Our offerings of excellent products at good prices to the Atari market has changed the meaning of the word "HAPPY" from adjective to noun. When someone says they have a HAPPY, you know they mean they have an Atari computer that works better since it incorporates our product.
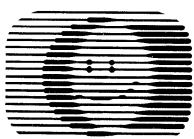
DISCOVERY CARTRIDGE

HAPPY COMPUTERS, Inc. • P.O. Box 1268 • Morgan Hill, California, USA • 95037
SALES & TECHNICAL HELP: (408) 779-3830 • m-f 9am - 5pm pacific time
INFORMATION MACHINE (408) 778-6092 • 24 hours

8 BIT HAPPY ENHANCEMENT INFO & NEWS

Our HAPPY 1050 ENHANCEMENT is the most useful upgrade for your Atari 1050 disk drive. This professional quality system has proven itself in over 10,000 disk drives throughout the world. Our 1050 ENHANCEMENT hardware and software system begins by giving your 1050 drive the most reliable and complete package for backup of copy protected disks for all 8 bit Atari computers; but that's not all. When you are finished backing up your disks, this product continues its usefulness with many other features that include high speed write with verify and high speed reading, plus our IBM PC transfer program and more.

MAXIMUM DISK STORAGE

The 1050 ENHANCEMENT allows your 1050 to have the maximum storage possible. It actually lets your 1050 operate in four different densities. All three Atari densities are supported including true double density, as well as the IBM PC density mode. Compare this to the standard 1050 which has only 2 densities. The increased density operates with full reliability.

FASTER WRITING AND READING

Automatic high speed reading and writing for the Atari was invented by HAPPY COMPUTERS. The 1050 ENHANCEMENT improves the speed performance in two ways. First, a buffer on the HAPPY board can hold 36 sectors at one time. This buffer minimizes the time your computer has to wait for the disk to rotate when the computer reads or writes a sector. The buffering of data operates with most software; no special software is needed.

Although other drives and upgrades have copied our high speed reading, no system but HAPPY's has high speed write with verify. Only HAPPY COMPUTERS lets you have data integrity by verifying all disk writing without compromising performance. Other systems turn off verify and don't even bother to tell you this. With other systems, you don't realize that there was a verify error until you try to read the data later, and by then it's usually too late; the data is lost. Unlike other systems, our fully buffered reading and writing does NOT require a special disk format or sector interleave or skew. The drive reads the sector interleave factor automatically when the disk is first inserted. With this information, the drive can buffer the data with the least possible delay.

Next, the serial data transfer rate between the computer and disk drive is increased by a factor of almost 3 times. This feature operates when special software is loaded into the personal computer, since the standard computer software is not programmed to have the serial transfer operate faster. This higher speed is supported by software available from other 3rd parties, as well as within HAPPY COMPUTERS' WARP SPEED SOFTWARE package.

HOW FAST IS IT?

Since the method of reading and writing is changed from single sector operation to multiple sector operations, the speed improvement varies according to the application. It is possible to construct test cases where the speed improvement is almost 30 times faster, but these do not represent the typical usage. For typical usage, let's discuss reading and writing an entire disk. Reading is roughly 3 times faster, and write with verify is roughly 5 times faster. This means that your drive will be able to write and verify the same amount of data in about one fifth the time.

ENHANCEMENT HARDWARE INSTALLATION

The hardware portion of the ENHANCEMENT is a high quality circuit board which comes from our factory fully assembled and tested. Its operation is backed by a one year parts and labor warranty. This board plugs into the inside of the 1050 drive. No soldering and no permanent modification is required. Complete step by step installation instructions are included. Most persons that can work with standard hand tools can do the job. HAPPY COMPUTERS also provides for and guarantees compatibility with the standard (unHAPPY) disk drive and software.

WARP SPEED SOFTWARE VERSION 7.1

Our WARP SPEED SOFTWARE provides the disk based tools to fully utilize the power of our 1050 and 810 HAPPY ENHANCEMENTs. The version 7.1 includes the following programs: The Menu options program, which displays system status, controls HAPPY drive modes, and selects our exclusive TRACER function. The HAPPY BACKUP and COMPACTOR programs, which back up more Atari 8 bit software than any other ENHANCEMENT available for your 8 bit Atari, and operate with one or two HAPPY drives. The MULTI DRIVE backup, which uses our exclusive method for simultaneous reading and writing with up to four HAPPY drives, making three complete disk copies WITH VERIFY, in under two minutes. The DIAGNOSTIC, which allows the user to verify proper HAPPY drive performance. The SECTOR COPIER, which provides the fastest single drive disk copying and can be used with RAMDISK, plus a WARP SPEED DOS and our IBMXFR utility. The WARP SPEED SOFTWARE programs are written in machine language, for maximum speed.

VERSION 7.1 HIGHLIGHTS

All of the copy protected programs we had seen prior to the release of version 7.1 can be backed up by version 7.1. The version 7.1 SECTOR COPIER now allows the use of 256K RAMDISKS, and has other improvements. The version 7.1 fills both sides of the disk with new features and an expanded help section. An exciting new feature of version 7.1 is the IBMXFR program which allows your 1050 HAPPY equipped drive to read and write floppy disks in the format used by IBM PCs.

IBM TRANSFER PROGRAM WELL RECEIVED

We have received many letters and calls from users offering praise of our IBMXFR program which was introduced in our version 7.1 software for the 8 bit HAPPY 1050 ENHANCEMENT last May. Here are some commonly asked questions and the answers concerning this feature.
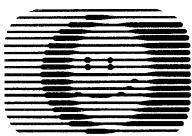
First a **WARNING**. Do not use disks marked **DS HD**, meaning HIGH DENSITY, with your 1050 drive. These disks are only for use with special high density floppy drives. Use only disks that are marked **SS DD**, or **DS DD**. **SS** means that a disk has been tested on the front side, and **DS** means that a disk has been tested on both sides. **DD** means that the disk holds data in either single or double density. The special high density disks have a different coating that will not work correctly with your double density 1050 drive!

QUESTION - What does your IBMXFR program do?
ANSWER - IBMXFR converts Atari files on a floppy disk readable by a DOS on an 8 bit Atari into a file on another floppy disk that can be read by MS DOS or PC DOS on an IBM PC or compatible. The transfer also operates equally well in the opposite direction, converting IBM files into Atari files. Any file can be transferred, regardless of content.

QUESTION - Why do I need an ATARI 1050 drive with a HAPPY ENHANCEMENT installed to use IBMXFR? Why can't I use some other disk drive?
ANSWER - Atari 8 bit DOS programs use either 128 or 256 bytes per sector. The IBM PC uses 512 bytes per sector. The IBMXFR program utilizes the programmability of the HAPPY ENHANCED 1050 disk drive to allow the 1050 drive to read and write the 512 byte sectors. No other disk drive will operate properly with the IBMXFR program allowing the 512 byte sector operations.

QUESTION - Do I need one or two drives with IBMXFR?
ANSWER - IBMXFR will operate with one or two disk drives. One disk drive must be an Atari 1050 disk drive with a HAPPY ENHANCEMENT installed. If only that one drive is used, both the IBM format disk and the Atari format disk will be accessed in it. With one drive, you must swap the source and destination disks during the transfer process. If a second drive is used, it may be any Atari compatible drive. It does not have to be a HAPPY ENHANCED Atari 1050 drive. When a second drive is used, it will be used to read and write the Atari format disk. The HAPPY 1050 will be used to read and write the IBM PC format disk.

QUESTION - Are there any disks that cannot be transferred?
ANSWER - Yes, the program to be transferred must be a file. Self booting disks and copy protected disks that do not contain all of their information in files cannot be transferred; see below.

QUESTION - What Atari DOS can be used with IBMXFR?
ANSWER - The IBMXFR program does not require any particular Atari DOS file format or structure. The IBMXFR program uses the CIO to read and write files so it is really DOS independent. We have tested IBMXFR with many popular Atari DOS programs.

There are some programs on the Atari that only operate under their own DOS environment. It may not be possible to load and operate IBMXFR with some of these DOS programs. An example of this is the LJK DOS used on the LETTER PERFECT program. Only LJK's programs work with LJK DOS. It is not possible to load IBMXFR into LJK DOS; LJK DOS does not allow this. Also, LJK DOS doesn't provide any way to convert files created by LETTER and DATA PERFECT into files readable by other DOS programs. This means that text files created by LJK LETTER PERFECT and data files created by LJK DATA PERFECT cannot be accessed directly by IBMXFR.

There are many special DOS programs on the Atari that will allow other programs like IBMXFR to load in, or will convert the file into other DOS formats. We have heard that some Atari users have written programs to convert LJK LETTER PERFECT files into a format accessible by other DOS programs. This is certainly possible, but HAPPY COMPUTERS cannot provide these.

QUESTION - Can I run IBM PC programs on my Atari?
ANSWER - The easiest answer is no. The IBM PC uses an 8088 processor chip and the Atari uses a 6502. Machine language programs can't be interchanged without using some additional hardware or software emulator, which is not available from HAPPY COMPUTERS. Higher level language programs that share a common syntax on both machines can be transferred and executed. Usually some work is needed to make a transferred program operate correctly.

IMPORTANT: Although you cannot easily run IBM programs on your Atari or vice versa, you can still utilize the other computer as a transfer vehicle for the program. Suppose your Atari could access some bulletin boards or time-share service that your IBM could not. You could use the Atari to download a program, and then use IBMXFR to transfer the program to IBM format so it can be run on the IBM PC. Perhaps a long distance phone call from that IBM with a modem at work is cheaper (to you) than a call from home. You could use the IBM to download an Atari program, take the floppy home and then use IBMXFR to convert the file so it can be run on your Atari. The important point is that although the program can't be run, it can still be treated as a file of data, and moved intact from one computer to another. The 6502 doesn't care that you are transferring an 8088 program. It just sees the 8088 program as data bytes.

QUESTION - What are people using IBMXFR for?
ANSWER - Everything we expected and more! The primary use is with text files. People compose papers and other written works at home on their Atari, and take their converted disks to work to

be printed on better printers which are connected to the IBM PCs at work. Please don't blame HAPPY COMPUTERS if you start getting more of your job done at home.

QUESTION - What requirements are there for the IBM PC side?
ANSWER - The IBM floppy disk must be formatted on the IBM PC as a single sided disk using the FORMAT A: /1 command. We have tested various PC and MS DOS versions 2 and 3 and not found any problem. We have not heard of any problem with any PC or brand of compatible with regard to the IBMXFR utility.

QUESTION - Aren't text files different between IBM and Atari?
ANSWER - Yes, the Atari uses ATASCII, and the IBM uses ASCII. Also, a particular word processor on either machine may use its own set of special control characters. Our IBMXFR will automatically convert ASCII to ATASCII and back.

NEW PROGRAMS THAT BACKUP USING VERSION 7.1

Version 7.1 is still the current version of HAPPY COMPUTERS WARP SPEED SOFTWARE for 8 bit HAPPY 810 and 1050 ENHANCEMENTS. Since the time that version 7.1 was released, HAPPY COMPUTERS has examined several new programs that can be correctly backed up by selecting the right PDB file number. By selecting PDB file number 23 from the front side of the version 7.1 disk, you can back up ACE of ACES by ACCOLADE. By selecting PDB file number 1 from the back side of the version 7.1 disk, you can back up INFILTRATOR and TRAILBLAZER by MINDSCAPE. In version 7.1, these program titles are not listed within those PDB file numbers. HAPPY COMPUTERS did not see these programs until after 7.1 was released. Now that HAPPY COMPUTERS has examined these programs, we have determined that the programs can be backed up correctly using the PDB file number specified.

7.1 SECTOR COPIER AND OTHER RAMDISKS

The SECTOR COPIER on the version 7.1 disk must be modified to work correctly with a computer that has the ICD RAMBO XL RAMDISK. The unmodified version 7.1 SECTOR COPIER will malfunction with this RAMDISK. The problem is that the RAMBO is similar to the NEWELL RAMDISK, but not exactly the same. The SECTOR COPIER tries to use the RAMBO as a NEWELL, which causes the computer to lock up. Refer to the information on the backside of the 7.1 disk, in regards to adapting the SECTOR COPIER to different RAMDISKS. The correct BANK SELECT CONTROL bytes to be used with the RAMBO are A3 A7 AB AF C3 C7 CB CF E3 E7 EB EF. Please note that when you choose the BANK SELECT BYTES for other RAMDISKS, it is important to ensure that the internal BASIC is NOT ENABLED! If you can't configure the SECTOR COPIER, you can order a special version 7.1D that is already configured to use the RAMBO.

VERSION 7.2 UNDER DEVELOPMENT

HAPPY COMPUTERS has begun to develop version 7.2 of the WARP SPEED SOFTWARE. The version 7.2 is not being shipped yet. As usual, version 7.2 will have new features and new disk backup capability. Version 7.2 will probably be completed and shipped during the first quarter of 1988. You can order version 7.2 disk by itself, or as part of a subscription.

We have examined several new programs that the version 7.1 does not correctly back up. These include a re-release of Boulder Dash Construction from EPYX, Superscript from Precision Software, and Alternate Reality the Dungeon from Datasoft. Please note that the Boulder Dash Construction previously released by First Star Software / Databyte, and the older Alternate Reality the City will back up with 7.1. Version 7.2 will back up these programs, when it is released. Let us know if there are any other programs that your are having difficulty backing up.
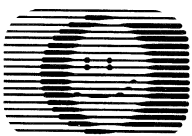
HAPPY COMPUTERS, Inc. • P.O. Box 1268 • Morgan Hill, California, USA • 95037
SALES & TECHNICAL HELP: (408) 779-3830 • m-f 9am - 5pm pacific time
INFORMATION MACHINE (408) 778-6092 • 24 hours

SOFTWARE UPDATE SUBSCRIPTION

For those of you that don't want to hassle with calling our information machine to get the latest scoop, we offer an update subscription. Those that already have a subscription will be receiving revision 7.2 automatically, when it is released. You can subscribe now and start your subscription with either version 7.1 which is available now, or with version 7.2 when it is available. If you have an 810 ENHANCEMENT, you must already have version 7 compatibility before you can subscribe. If you need the 810 version 7 upgrade, order now before we run out!.

The subscription is a one year subscription, and includes all software updates that we have within that one year. At least 2 software updates are promised for your subscription fee. You will also receive all information mailings to keep you up to date about special offers, and other things going on at HAPPY COMPUTERS. Your subscription period will not begin until we mail out the first software update. When we have a software update, we will mail these to subscribers first. Once the first update is sent, your subscription cannot be canceled. CALIFORNIA residents must include sales tax for the subscription fee.

CHEERUP YOUR 1050 DUPLICATOR

Many Atari users agree that the HAPPY ENHANCEMENT is superior in every respect to the 1050 DUPLICATOR sold by DUPLICATING TECHNOLOGIES. The HAPPY backs up every disk we have ever seen. The DUPLICATOR still cannot backup many disks. The HAPPY ENHANCEMENT has many features that DUPLICATOR will never have. Hundreds of DUPLICATOR owners have purchased our CHEERUP UPGRADE which converts the DUPLICATOR into a HAPPY ENHANCEMENT! We are still offering this upgrade. If the DUPLICATOR was as good as our HAPPY, would so many people have paid money to upgrade it? Be smart and make the right choice to begin with. Send us a letter or call our office if you need more information on how crummy the DUPLICATOR is when compared to the HAPPY. You don't need to rely on our word, all PUBLISHED comparisons greatly favored the HAPPY!

1050 HAPPY - REV 2 ROM

If you have a 1050 ENHANCEMENT that has a rev 1 ROM (see page 9, paragraph 3 of the rev 7 SOFTWARE USER MANUAL to determine this), we now have the rev 2 ROM in stock, which may be purchased at your option. This is not a required upgrade. If you need further information on what the differences between rev 1 and rev 2 are, call or write our office. See the enclosed SUPER DISCOUNT ORDER FORM to order this upgrade. The biggest difference is that the ULTRA SPEED is built in. This is the final ROM version for the 1050 ENHANCEMENT. All 1050 ENHANCEMENTS shipped by us since mid 1985 have had the rev 2 ROM installed in the factory.

SERVICE AND INSTALLATION

We can offer installation and service of any product we sell. We can also offer service on complete disk drives that have our products installed. Contact our office for further information. When repair of your ENHANCEMENT or HAPPY ENHANCED disk drive is needed, please provide us with a written explanation of the problem your are having. This will allow us to quickly identify and correct the problem.

810 VERSION 7 UPGRADE

This item is on close out. Once these are gone, this custom made IC will no longer be available. Order immediately to avoid disappointment! No registration is required to order this upgrade. This upgrade is only needed for 810 HAPPY drives that cannot run version 7 software. You must specify the upgrade type. Most 810 HAPPY drives need the 2732 type. You may specify either 2532 or 2732 type, or you may specify the serial number of the HAPPY board if applicable. Most hand-wired HAPPY boards use the 2732 type. The installation can usually be done without soldering.

THE HAPPY 1050 CONTROLLER

This 1050 CONTROLLER is the perfect complement to the HAPPY 1050 ENHANCEMENT. This hardware circuit board installs easily in your 1050; no soldering is needed. You must have a HAPPY 1050 ENHANCEMENT to utilize the CONTROLLER. The CONTROLLER circuit board mounts inside the 1050. The control switches and display LED come through the left hand front panel, adding a professional touch. The most important feature of the CONTROLLER is the SLOW / FAST switch. This switch lets you select both the slow and fast modes for both reading and writing. This is the most convenient way to boot software in the slow mode, and then switch to the fast mode for writing. The CONTROLLER also allows complete control of the disk drive write protect. For example, you can write on the disk's flip side without the need to punch a hole in the disk. This item is on close out. All sales subject to stock on hand.
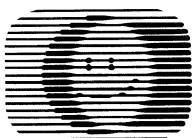
DOS PROGRAMS FOR 8 BIT ATARI

The WARP SPEED DOS that comes free with the WARP SPEED SOFTWARE DISK is a modified version of Atari DOS 2.0s that allows for the fastest operation with HAPPY ENHANCED 810 and 1050 disk drives. This DOS does not support any special hardware RAMDISKS, and only operates in single density.

You can use any DOS with your HAPPY DRIVE that will work with other drives. The only DOS programs that correctly give you the highest speed with HAPPY drives are the free WARP SPEED DOS, WARP SPEED DOSXL, and TOP DOS 1.5. SPARTA DOS may be used at high speed with HAPPY 1050 drives. You must enable the SET TO FAST WRITE option or SPARTA DOS will not write correctly to your 1050 HAPPY drive.

WARP SPEED DOSXL is HAPPY COMPUTERS' own version of Optimized Systems Software's DOSXL that has been improved to allow the fastest reading and fastest write with verify that the HAPPY 810 and 1050 are capable of. DOSXL is a command driven DOS that does have a simple menu which can be overridden. Unlike TOP DOS and ATARI DOS 2.0 there is a resident CONSOLE PROCESSOR program. When you type DOS from BASIC you will immediately enter the CONSOLE PROCESSOR program. As you type in commands, the command program is read from the disk and executed. Once a command is loaded, a selection menu for that command usually helps you do the specific task. DOSXL provides extremely good memory efficiency since there is no large DUP program loaded while copying files. DOSXL also provides excellent memory efficiency when used with OSS SUPER CARTRIDGES, or with an 800XL or 130XE computer, utilizing the space under the SUPER CARTRIDGE or under the OS ROM while freeing up the lower personal computer memory address space. HAPPY COMPUTERS' WARP SPEED DOSXL also supports the 130XE and AXLON RAMDISK, single and true double density, and provides density smartness. WARP SPEED DOS XL does not support any other RAMDISK, or medium (enhanced) density.

TOP DOS 1.5 was written by ECLIPSE SOFTWARE. TOP DOS provides most of the features of DOSXL, plus it supports medium density. TOP DOS does not provide under cartridge or under OS ROM versions as in DOSXL. The biggest difference is that TOP DOS has many menu selectable commands and options which are all loaded in and available when you enter DOS. TOP DOS uses relocatable modules that allow the user to construct a DOS to fit the need. HAPPY, density smart (WISE), and RAMDISK type are selectable modules. For persons already familiar with Atari DOS, TOP DOS will be easier to use than WARP SPEED DOS XL.